

seven species of small Indian Cetacea, one of them being remarkable for its affinity to the Sperm-Whale (*Physeter*); and there is no reason to suppose we have not still a good deal to learn about the Cetacea of that region. It is not improbable, therefore, that the so-called "Palmyra fish" may belong to a section hitherto unnoticed; and I have now brought the subject before the Society in the hope that these notes may fall into the hands of persons having opportunities of making further observations on the animal, and of obtaining information on the many points about which unfortunately I can say nothing.

It may be worth while recording here a circumstance in connexion with the Cetacea, which came under my notice one day whilst I was at anchor on the Pearl Banks. Besides the well-known Dugong (*Halicore*), which the late Sir J. Emerson Tennent has figured (Nat. Hist. of Ceylon, p. 69, 1861) sitting up in the water like a supposed mermaid (a position never observed by myself or any one I have been able to meet with), three easily distinguished forms of Dolphin or Porpoise frequented the north-west coast of Ceylon—one of them, remarkable for its long slender snout, being probably *Delphinus longirostris*. A herd of about two hundred of this species, the largest number I ever saw together, was one day observed slowly advancing in a closely packed line towards the vessel. They were making a great commotion and apparently driving a shoal of small fish; but whilst thus engaged, I distinctly observed, at least four or five times, a pair of these animals assume a vertical position, with their heads well above the surface, for three or four seconds. This attitude is so precisely what has been described by several persons who have had good opportunities of observing Cetaceans as the one assumed whilst *in copulâ*, that I have no doubt what I then saw will bear the same explanation. The performance was repeated in different parts of the line, but only at one place at a time, as if there were one eager male paying his attentions successively to different individuals of the opposite sex. This is what might be expected among gregarious animals; but the frequency with which I have observed a single pair of Porpoises in our own harbours leads me to doubt whether even the generally gregarious species of Cetacea are in all cases unrestricted in their loves, and to believe that pairing, at all events during part of the year, may be the rule with some of them.

7. On the Reptiles and Amphibians of Borneo.

By ALBERT GÜNTHER, M.A., M.D., Ph.D., F.R.S., F.Z.S.

[Received March 21, 1872.]

(Plates XXXV.–XL.)

IN order to determine the specimens of a considerable collection of Reptiles and Amphibians, made by Mr. Everett at Matang in the district of Sarawak, and recently purchased by the Trustees of the

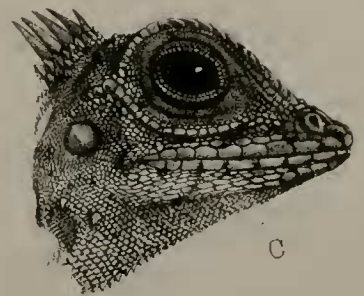
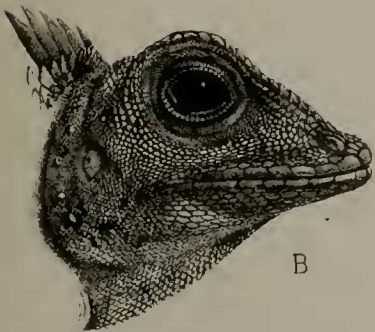




G.H.Ford

Mintern Bros imp

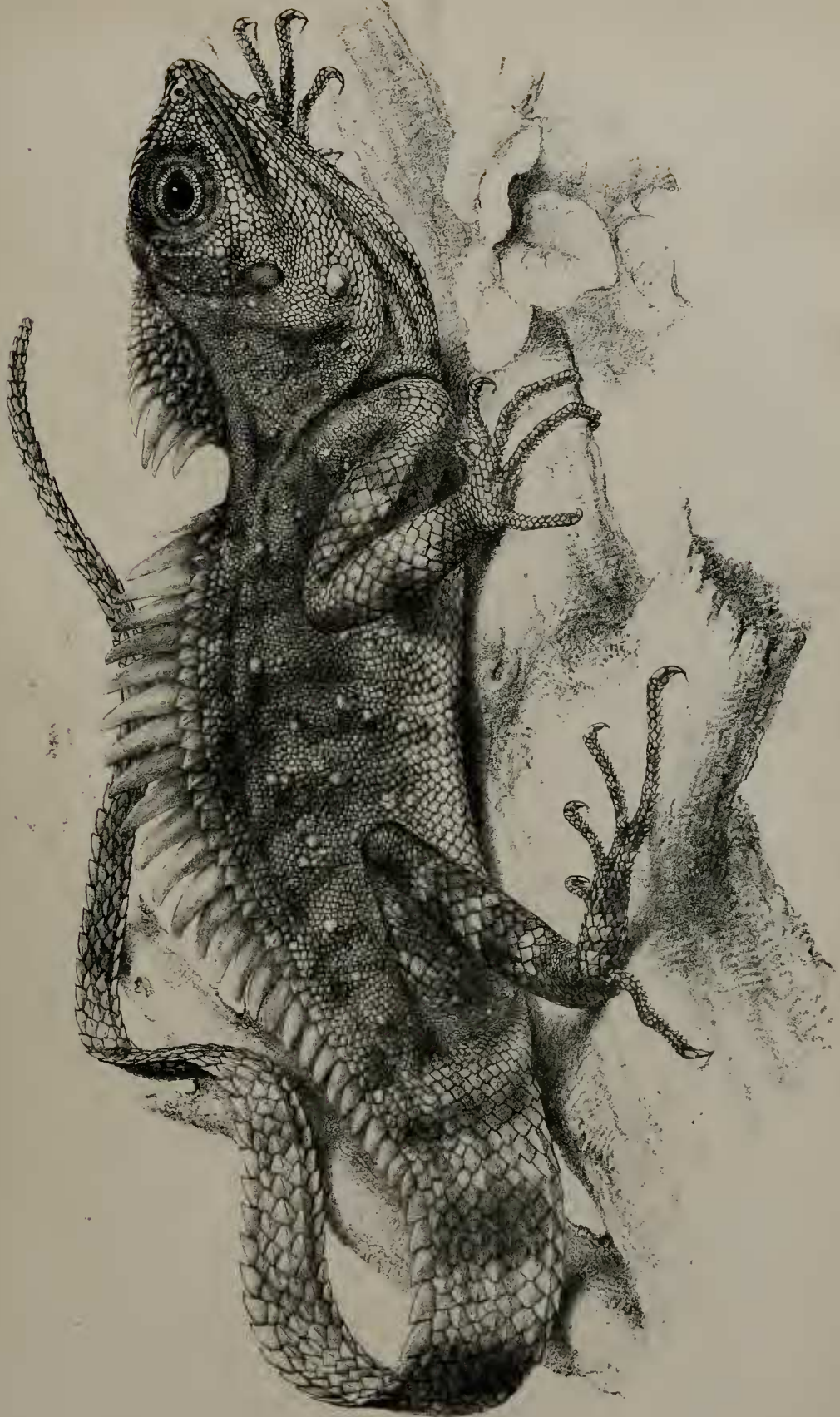
TIARIS LIOGASTER.



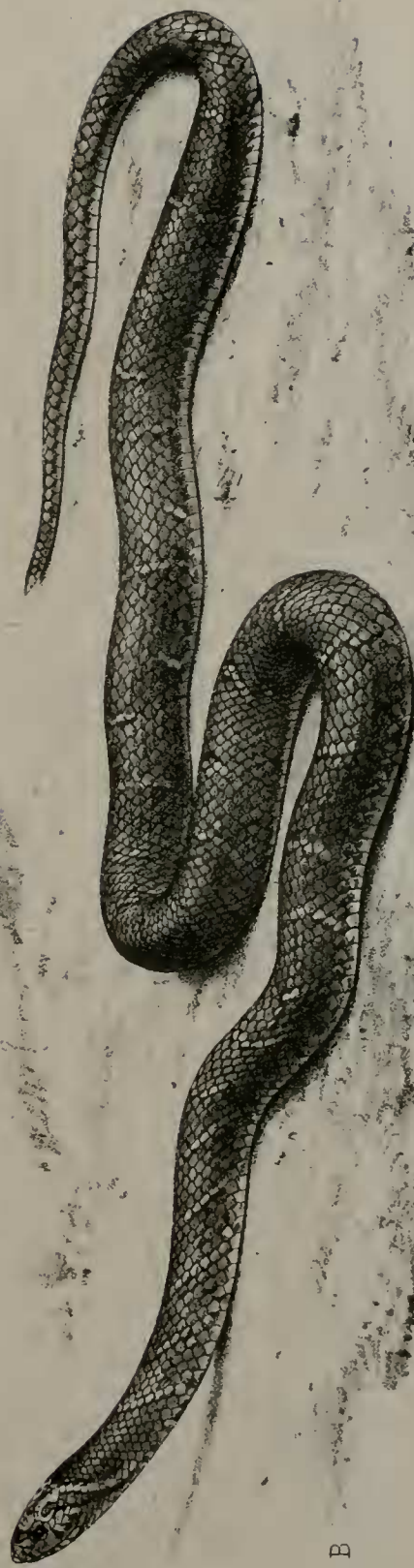
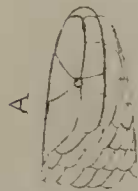
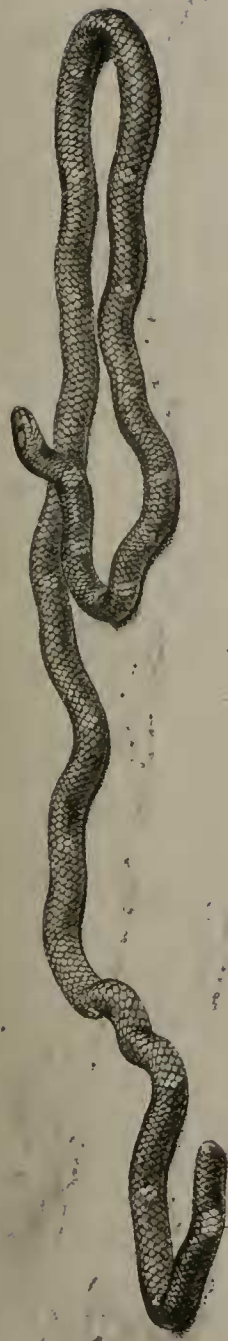
G.H.Ford

Mmtern Bros imp.

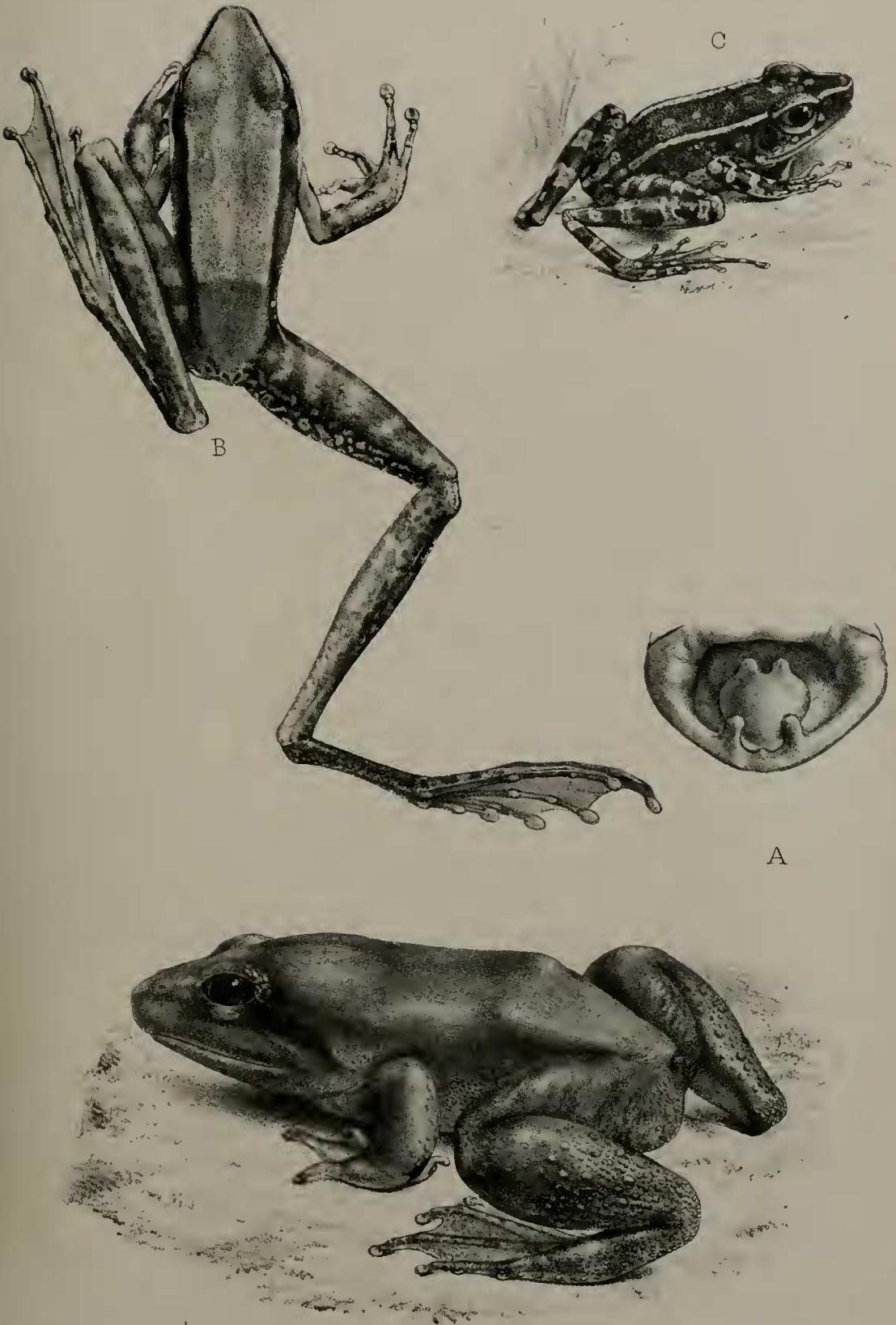
A LOPHOCALOTES INTERRUPTUS.
B. TIARIS MIOTYMPANUM C. TIARIS SOPHIÆ.



TIARIS TUBERCULATUS



B



G.H.Ford

Mintern Bros. mmp.

A. RANA CONSPICILLATA. B. HYLORANA JERBOA
C. POLYPEDATES SIGNATUS

British Museum, I have found it necessary to collect all the information regarding the herpetology of Borneo which is scattered through various works and periodicals.

The first extensive collections received in Europe were from two localities:—1. From the Dutch settlements in the south of the island, at Banjermassin, whence G. Müller and others sent to the Leyden Museum the specimens described by Schlegel in the “*Bydragen tot de Dierkunde*” (*Verhandelingen over de natuurl. Geschiedenis der Nederlandsche overzeesche bezittingen*) and in the ‘*Essai sur la Physiognomie des Serpens.*’ 2. From the principality of Sarawak, where Sir J. Brooke, Sir E. Belcher, and Mr. Low paid for a considerable period much attention to the fauna. The collections made by them were presented to the British Museum, and described partly by Dr. Gray, and partly more recently by the author in the Catalogues of the British Museum and in the ‘*Reptiles of British India.*’

Another large collection was made at Labuan by Mr. J. Motley, for, or with the assistance of, Mr. L. Llewellyn Dillwyn. It was the intention of these gentlemen to publish an illustrated work containing a full account of the animals, both vertebrate and invertebrate, inhabiting that island; and, indeed, one part of this work, entitled ‘*Contributions to the Natural History of Labuan and the adjacent coasts of Borneo,*’ was issued in 1855; but the undertaking was abandoned in consequence of the death of Mr. Motley. This part contains descriptions of fourteen reptiles, some of which are beautifully illustrated. Some years ago the collection made at Labuan was presented by Mr. Dillwyn to the British Museum; unfortunately it had been mixed up with another obtained at Banjermassin.

The next contribution to Bornean herpetology was made by Dr. Bleeker, who reported, in the ‘*Natuurk. Tyds. for Nederl. Indië,*’ on several collections received from various localities. He enumerates some twenty species from Sinkawang (vol. xvi. 1859, pp. 37, 188), and seven from Montrado (ibid. p. 197) on the west coast, three from Koti on the east coast (ibid. p. 206), and sixteen from Sintang (ibid. vol. xx. 1860, p. 200). In 1859 Dr. Bleeker was able to give a list of some ninety species known from Borneo (vol. xvi. pp. 438–441), which number, however, is reduced by a critical examination to eighty-four. It is a matter of some inconvenience that this author introduced into his lists many names of species which he has never described. From an examination of the typical specimens (which have been obtained for the British Museum) I find that but few of these names can be maintained, as the majority were given to known species, whilst others have been superseded by names given at a later period, but accompanied with a proper description.

A. C. J. Edeling has made a further addition to the fauna of Banjermassin. In ‘*Nederl. Tyds. Dierk.*’ ii. 1865, he enumerates sixteen species previously not known from that part of Borneo. And, finally, Prof. Peters has given descriptions of nineteen new species, collected by the Marquis Doria at Sarawak, in ‘*Monatsber. Berl. Acad.*’ 1871, p. 569.

Beside the Reptiles and Amphibians referred to in these publications, some have to be added that were incidentally described on other occasions, besides those contained in the collection recently brought from Matang. I cannot hesitate to express a belief that only a small part of the Reptiles of this island are known: its interior has never been searched; and even a great portion of its coasts are zoologically unknown. The places where the species in the list subjoined have been collected are the following:—

In the western parts (W.): Sarawak (Matang), Pontianak, Sintang, Sinkawang, Montrado.

In the southern parts (S.): Banjermassin (Martapoura).

On the east coast (E.): Koti.

In the northern parts (N.): Labuan.

I shall state in the list in which of these divisions each species is found, mark the species peculiar to Borneo by printing them in *italics*, and add an asterisk to those which in the British Museum are not represented by Bornean examples.

TORTOISES.

- | | | |
|---|----|----|
| 1. <i>Cuora borneensis</i> (Schleg. et Müll.) | W. | S. |
| 2. <i>Emys crassicolis</i> (Bell) | | |
| *3. <i>Emys spengleri</i> (Schweig.) | | |
| *4. <i>Geoemyda spinosa</i> (Schleg.) | | S. |
| 5. <i>Cyclemys ovata</i> (Gray) | W. | |
| 6. <i>Batagur pietus</i> (Gray) | W. | |
| *7. <i>Trionyx javanicus</i> (Geoffr.) | | S. |
| *8. <i>Trionyx subplanus</i> (Geoffr.) | | |
| *9. <i>Chelonia imbricata</i> (auct.) | | |
| [? *10. <i>Dermatochelys coriacea</i> (L.)] | | |

CROCODILES.

- | | | | | |
|---|----|----|----|----|
| 11. <i>Crocodylus biporcatus</i> (Cuv.) | W. | S. | E. | N. |
| 12. <i>Crocodylus palustris</i> (Schleg.) | W. | | | |
| 13. <i>Gavialis schlegelii</i> (Müll.) | W. | S. | | |

LIZARDS.

- | | | | | |
|--|----|----|-----|----|
| 14. <i>Monitor dumerilii</i> (Müll.) | W. | S. | | |
| 15. <i>Hydrosaurus salvator</i> (Laur.) | W. | S. | ... | N. |
| 16. <i>Tachydromus sexlineatus</i> (Daud.) | W. | S. | | |
| 17. <i>Hinulia naevia</i> (Gray) | | | | |
| *18. <i>Mococa nitens</i> (Ptrs.) | W. | | | |
| *19. <i>Mabouia parietalis</i> (Ptrs.) | W. | | | |
| *20. <i>Amphixestus beccarii</i> (Ptrs.) | W. | | | |
| *21. <i>Norbea brooki</i> (Gray) | W. | | | |
| 22. <i>Tiliqua rufescens</i> (Shaw)† | W. | S. | ... | N. |

† Among various specimens of *Euprepes rufescens* collected at Matang, and more or less approaching the typical form from the continent of India, we received one which is, without the least doubt, *Euprepes percarinatus*, var. *borneensis*, of Peters, from the same part of Borneo; its scales are provided with from five to seven keels. This series of examples shows clearly that the relative position of the shields of the upper part of the snout, and the number and development of the keels of the scales, and also the coloration are subject to great variation, and that the var. *borneensis* cannot be specifically distinguished from *E. rufescens*, although, perhaps, the Javan *E. percarinatus* may be a really distinct species.

23.	<i>Tiliqua prænornata</i> (Ptrs.) †	W.	S.
24.	<i>Euprepes belcheri</i> (Gray).		
25.	<i>Euprepes olivaceus</i> (Gray)	W.	
26.	<i>Hemidactylus brookii</i> (Gray)	W.	
27.	<i>Hemidactylus vittatus</i> (Gray).		
*28.	<i>Hemidactylus frenatus</i> (Schleg.)		S.
[? *29.	<i>Hemidactylus variegatus</i> (Cuv.) ‡		S.]
30.	<i>Nycteridium schneideri</i> (Shaw)		S. ... N.
31.	<i>Pentadactylus borneensis</i> (Gthr.).		
*32.	<i>Pentadactylus dorsalis</i> (Ptrs.)	W.	
33.	<i>Gecko monarchus</i> (Schleg.)	W.	S. ... N.
34.	<i>Gecko smithii</i> (Gray)		... ... N.
35.	<i>Gecko albofasciatus</i> (Gthr.) §		S.
[? *36.	<i>Platydictylus guttatus</i> (Cuv.) ‡		S.]
37.	<i>Ptychozoon homalocephalum</i> (Crev.).		
38.	<i>Tarentola borneensis</i> (Gray).		
39.	<i>Heteronota kendallii</i> (Gray)	W.	
40.	<i>Gymnodactylus marmoratus</i> (Kuhl)	W.	
41.	<i>Gymnodactylus consobrinus</i> (Ptrs.)	W.	
42.	<i>Draco volans</i> (L.)	W.	
43.	<i>Draco fimbriatus</i> (Kuhl)	W.	
44.	<i>Draco cornutus</i> (Gthr.)	W.	... ... N.
45.	<i>Draco cristatellus</i> (Gthr.)	W.	
[? *46.	<i>Draco hamatopogon</i> (Schleg.), according to Bleeker.]		
47.	<i>Gonyocephalus doriae</i> (Ptrs.)	W.	
*48.	<i>Tiaris borneensis</i> (Schleg.).		
49.	<i>Tiaris biogaster</i> (Gthr.)	W.	
50.	<i>Tiaris miotympanum</i> (Gthr.) ||		... ... N.
51.	<i>Dilophyrus grandis</i> (Gray)	W.	
52.	<i>Bronchocela cristatella</i> (Kuhl)	W.	S. ... N.
*53.	<i>Bronchocela jubata</i> (D. et B.)		S. (Edeling).
54.	<i>Japalura nigrilabris</i> (Ptrs.)	W.	S.

SNAKES.

*55.	<i>Typhlops braminus</i> (Cuv.)	...	S. (Edeling).
*56.	<i>Pilidium lineatum</i> (Boie)	W.	S.
57.	<i>Typhlocalamus gracillimus</i> (Gthr.)	W.	
58.	<i>Cylindrophis rufus</i> (Laur.)	W.	S.
59.	<i>Xenopeltis unicolor</i> (Raw.)	W.	S.
60.	<i>Calamaria borneensis</i> (Blkr.)	W.	
*61.	<i>Calamaria schlegelii</i> (D. et B.).		
62.	<i>Calamaria roelandti</i> (Blkr.).		
63.	<i>Calamaria bicolor</i> (Schleg.)	W.	
64.	<i>Calamaria arcticeps</i> (Gthr.)	...	... ... N.
65.	<i>Calamaria nigro-alba</i> (Gthr.)		S.
66.	<i>Calamaria flaviceps</i> (Gthr.)	W.	
67.	<i>Calamaria temminckii</i> (D. et B.).		
68.	<i>Calamaria agamensis</i> (Blkr.)	W.	

† This species had been previously described by Edeling (Nederl. Tyds. Dierk. ii. 1865, p. 201) under the name of *Apterygodon vittatum*. The specific name having been preoccupied for an African species, I retain the name proposed by Peters. Bleeker also knew this species; at least we received a specimen from him with the MS. name "*Euprepes ceramensis*;" so that this Lizard does not appear to be confined to Borneo.

‡ According to Bleeker, *l. c.* xvi. p. 433. I doubt the occurrence of this species in Borneo.

§ Of this species we have received three specimens from Dr. Bleeker under as many different names, viz. *Platydictylus pentonopus*, *Platydictylus borneensis*, and *Hemidactylus zosterophorus*.

|| An = *Gonyocephalus chameleontinus*, Motley et Dillwyn?

*69.	<i>Calamaria benjaminsii</i> (Edeling) .....	...	S.
*70.	<i>Calamaria martapurensis</i> (Edeling) .....	...	S.
71.	<i>Simotes subcarinatus</i> (Gthr.)	W.	
72.	<i>Simotes octolineatus</i> (Schneid.)	W.	S.
73.	<i>Simotes labuanensis</i> (Gthr.)	W.	... N.
74.	<i>Simotes vertebralis</i> (Gthr.)		
75.	<i>Ablabes melanocephalus</i> (Gray) †	W.	S.
76.	<i>Ablabes baliodirus</i> (Boie)	W.	S. E.
*77.	<i>Ablabes longicaudus</i> (Ptrs.)	W.	
78.	<i>Ablabes periops</i> (Gthr.)	W.	
*79.	<i>Ptyas korros</i> (Raw.) .....	...	S. (Blkr.).
80.	<i>Compsosoma melanurum</i> (Schleg.)	W.	... E.
*81.	<i>Compsosoma radiatum</i> (Raw.)	W.	(Blkr.).
82.	<i>Xenelaphis hexahonotus</i> (Cant.) ‡	W.	
83.	<i>Zaocys fuscus</i> (Gthr.)	W.	
84.	<i>Zaocys carinatus</i> (Gthr.)	W.	
85.	<i>Tropidonotus rhodomelas</i> (Boie)	W.	
86.	<i>Tropidonotus quincunciatus</i> (Schleg.)		
87.	<i>Tropidonotus maculatus</i> (Edeling, 1865) §	W.	S.
[? 88.	<i>Tropidonotus stolatus</i> (L.)		
89.	<i>Tropidonotus trianguligerus</i> (Raw.)	W.	S.
90.	<i>Tropidonotus flaviceps</i> (D. et B.) || .....	W.	S. E.
91.	<i>Tropidonotus sarawacensis</i> (Gthr.) ¶	W.	
92.	<i>Tropidonotus conspicillatus</i> (Gthr.)	W.	
93.	<i>Cerberus rhynchops</i> (Schneid.)	W.	S.
94.	<i>Cerberus acutus</i> (Gray)		
95.	<i>Homalopsis buccata</i> (L.)	W.	S.
96.	<i>Pythonopsis punctata</i> (Gray) ††	W.	
*97.	<i>Homalopsis doriae</i> (Ptrs.)	W.	
98.	<i>Hypsirhina plumbea</i> (Kuhl)	W.	S.
99.	<i>Hypsirhina enhydria</i> (Schneid.)	W.	S.
100.	<i>Fordonia unicolor</i> (Gray)	W.	S.
101.	<i>Miralia alternans</i> (Reuss) ‡‡		
102.	<i>Cyclophis tricolor</i> (Schleg.) §§	W.	S.
103.	<i>Gonyosoma oxycephalum</i> (Raw.)	W.	... N.
*104.	<i>Gonyosoma margaritatum</i> (Ptrs.)	W.	
105.	<i>Psammodynastes pictus</i> (Gthr.) ||| .....	W.	S.
106.	<i>Chrysopeleu rubescens</i> (Gray) .....	...	... N.
107.	<i>Chrysopeleu ornata</i> (Shaw)	W.	... N.
108.	<i>Dendrophis picta</i> (Gm.)	W.	S. E. N.
109.	<i>Dendrophis caudolineata</i> (Gray)	W.	S. ... N.
*110.	<i>Dendrophis formosa</i> (Schleg.) .....	...	S. (Blkr.).
111.	<i>Tragops prasinus</i> (Raw.)	W.	S. ... N.
112.	<i>Dipsas dendrophila</i> (Raw.)	W.	S. ... N.
*113.	<i>Dipsas cynodon</i> (Cuv.)		

† = *Enicognathus javanicus*, Blkr. l. c. xvi. p. 437.

‡ = *Dendrophis dumerilii* (Blkr.), which is the adult, and = *Ablabes polyhemizona* (Blkr.), which is the young.

§ = *T. sundancensis* of Bleeker, who never gave a description of the species.

|| = *T. leucomelas* (Gthr.) = *Amphiesma lindmanni* (Blkr.) = *A. rufotorquatum* (Edeling).

¶ = *T. maculatus*, Ptrs., nec Edeling.

†† Besides the typical example, the British Museum possesses a second from Sinkawang, the type of Bleeker's *Eurostus heteraspis* (l. c. xvi. p. 440). On comparing these examples with Prof. Peters's description of *Pythonopsis borneensis* (Berlin. Monatsber. 1871, p. 576), I come to the conclusion that they are the same species.

‡‡ = *Rachitia indica* (Gray), and = *Rhabdion borneensis* (Blkr.).

§§ = *Ablabes schlegelii* (Blkr.).

||| An = *P. pulverulentus* (Blkr.), l. c. xx. p. 201 ?

114. <i>Dipsas boops</i> (Gthr.) .....	...	...	N.
*115. <i>Dipsas multimaculata</i> (Boie).....	S. (Blkr.)		
116. <i>Tetragonosoma effrene</i> (Cant.)	W.		
117. <i>Amblycephalus boa</i> (Kuhl).			
*118. <i>Pareas carinata</i> (Wagl.), according to Bleeker	W.	S.	...
119. <i>Pareas lævis</i> (Kuhl)	W.		
120. <i>Python reticulatus</i> (Schn.)	W.	S.	...
121. <i>Acrochordus javanicus</i> (Hornst.)	S.		
122. <i>Hamadryas elaps</i> (Schleg.).....	W.		
*123. <i>Bungarus annularis</i> (Daud.)	W.		
124. <i>Bungarus flaviceps</i> (Rnh.)	W.	...	...
125. <i>Naja tripudians</i> (Merr.).....	W.	S.	...
126. <i>Callophis intestinalis</i> (Laur.)†	W.	S.	E.
127. <i>Callophis bivirgatus</i> (Boie)‡	W.		
128. <i>Trimeresurus wagleri</i> (Schleg.)	W.	...	...
129. <i>Pelamys bicolor</i> (Schn.).			
130. <i>Hydrophis brookii</i> (Gthr.).			
131. <i>Hydrophis loreata</i> (Gray).			
132. <i>Hydrophis schistosus</i> (Daud.), according to Bleeker.			

AMPHIBIANS.

133. <i>Epicrium glutinosum</i> (L.)	W.		
134. <i>Epicrium monochroum</i> (Blkr.).....	W.		
135. <i>Rana conspicillata</i> (Gthr.)	W.		
136. <i>Rana gracilis</i> (Wieg.)	W.	...	...
137. <i>Rana tigrina</i> (Daud.)	W.	S.	...
138. <i>Leptobrachium gracile</i> (Gthr.)	W.		
139. <i>Megalophrys montana</i> (Kuhl)	W.	S.	
140. <i>Calophrynus pleurostigma</i> (M. L.)	S.		
*141. <i>Calophrynus punctatus</i> (Ptrs.)	W.		
142. <i>Bufo melanostictus</i> (Schn.)	W.	S.	
143. <i>Bufo asper</i> (M. L.).....	W.	S.	...
144. <i>Bufo biporcatus</i> (M. L.).....	S.	...	N.
145. <i>Bufo divergens</i> (Ptrs.)	W.	...	N.
146. <i>Bufo leptopus</i> (Gthr.)	W.		
147. <i>Pseudobufo subasper</i> (Tsch.)	S.		
148. <i>Hylorana erythræa</i> (Schleg.)	S.	...	N.
149. <i>Hylorana luctuosa</i> (Ptrs.)	W.		
150. <i>Hylorana jerboa</i> (Gthr.).....	W.		
*151. <i>Ixalus pictus</i> (Ptrs.)	W.		
152. <i>Polypedates quadrilineatus</i> (Wgm.)	W.	...	...
153. <i>Polypedates guttatus</i> (Gthr.)	W.		
154. <i>Polypedates signatus</i> (Gthr.)	W.		
*155. <i>Polypedates raniceps</i> (Ptrs.)	W.		
156. <i>Rhacophorus pardalis</i> (Gthr.).			
*157. <i>Calohyla sundana</i> (Ptrs.)	W.		

Hylot. chalar
note Matsuy

It would be premature to draw positive conclusions from this list with regard to the general character of the Reptilian fauna of Borneo, as well as to the relations of the local faunæ to one another. The area from which collections have been received is only about one eighth of the whole island, and not larger than Ceylon. From the latter we know about 120 species, of which 65 species and 12 genera are peculiar to the island. Of the 154 Bornean Reptiles, about 50 species and 8 genera have hitherto not been found else-

† In several varieties, one of which I consider to be *Adeniophis nigro-taniatus* (Ptrs.).

‡ = *Elaps tetratania*, Blkr. l. c. xx. p. 201.

where. It is, perhaps, worthy of notice that none of the poisonous Snakes are peculiar to the island; and, on the whole, we may say that this part of its fauna, so far as it is known at present, does not essentially differ from that of the other large Malasian islands.

I proceed now to the description of some species which appear to be new; and I take this opportunity of noticing a few additional species from other parts of the East-Indian archipelago.

DRACO CRISTATELLUS. (Plate XXXV. fig. A.)

The length of the hind limb equals the distance between the axils of the limbs. Nostrils lateral, obliquely directed upwards and outwards. Male with a slight nuchal crest in the form of a low fold. Tail crested, the crest being formed by rather distant, triangular, pointed scales. Scales small, those on the back smooth, without scattered larger ones; abdominal scales keeled. Orbit without prominence above. Tympanum nearly entirely scaly. Upper parts light chestnut-brown, with irregular transverse black markings. Gular sac golden-yellow, with a brown anterior edge. Lower side of the wings nearly uniform whitish, with only a few blackish spots along its anterior margin.

One adult male from Sarawak.

/not **DRACO SPILOPHALLUS.** (Plate XXXV. fig. B.)

The length of the hind limb equals the distance between the axils of the limbs. Nostrils lateral, directed outwards. No crest. Scales small, those on the back smooth, without scattered larger ones, all much smaller than the upper labial shields; abdominal scales keeled. Orbit without prominence. Tympanum distinct. Upper parts marbled with brown; sides of the neck reticulated; wings yellowish white, with small black spots on their basal half, which are visible on the upperside of the wings as well as on the lower.

Two specimens from Manado.

TIARIS LIOGASTER. (Plate XXXVI.)

Dorsal crest continuous, very high in the adult, disappearing on the front part of the tail. Sides with irregularly scattered larger scales. Scales of the median line of the gular pouch not conspicuously different from those on the side of the pouch. Abdominal scales of moderate size, smooth, or with a very faint keel. The middle of the upper arm surrounded by about seventeen or eighteen longitudinal series of scales. Tympanum as large as the eye. Throat with black spots, more or less distinctly arranged in oblique series converging towards the median line of the pouch.

Three adult, one half-grown, and one young specimen from Sarawak.

TIARIS MIOTYMPANUM. (Plate XXXVII. fig. B.)

Dorsal crest continuous, high in the adult, rather abruptly terminating on the root of the tail. Sides with a series of larger scales along each side of the back; no other scattered large scales on the side. Scales of the median line of the gular pouch not conspicuously

different from those on the side of the pouch. Abdominal scales small, very obtusely keeled. The middle of the upper arm surrounded by about twenty-four longitudinal series of scales. Tympanum very distinct, but small, about one third of the size of the eye. Throat apparently without spots.

Two adult specimens from Labuan.

TIARIS SOPHIÆ. (Plate XXXVII. fig. C.)

Tiaris bellii, Gray, Lizards, p. 239 (not D. & B.).

Tiaris sophiæ, Gray, Lizards, p. 240.

Tiaris petersii, Günth. Zool. Record, ii. p. 136.

Dorsal crest continuous, high in the adult, disappearing on the front part of the tail. Sides with irregularly scattered larger scales. In the adult male the scales of the median line of the gular pouch enlarged and provided with a strong keel, which terminates in a prominent spine. Abdominal scales rather small, strongly keeled. The middle of the upper arm surrounded by about twenty longitudinal series of scales. Tympanum very distinct, smaller than the eye. Throat without, or with rather indistinct, oblique blackish lines.

Two adult, two half-grown, and two young specimens from the Philippine Islands.

TIARIS TUBERCULATUS. (Plate XXXVIII.)

Agrees with *Tiaris dilophus* in habit, structure of the dorsal crest, scattered larger scales on the sides, &c. But the scales generally are considerably larger, especially on the tail, limbs, and gular pouch, and provided with very faint keels only. The scales along the upper edge of the tail form rather a serrature than a crest. A large round conical scale below the tympanum, on the angle of the lower jaw.

One adult specimen from the East-Indian archipelago.

LOPHOCALOTES.

This genus differs from *Calotes* in the structure of the crest, which is interrupted on the neck, and formed by distant spines on the back.

LOPHOCALOTES INTERRUPTUS. (Plate XXXVII. fig. A.)

Head without spines; but there is a larger scale, conically raised, on each side of the neck, midway between the tympanum and commencement of the nuchal crest. A series of three enlarged scutes between the eye and tympanum. Dorsal crest moderately high, composed of close-set lanceolate spines on the neck, interrupted above the shoulder, and formed by about fourteen triangular spines on the trunk, only every alternate median scale being modified into a spine. No fold in front of the shoulder. Scales in the median line of the throat much smaller than those on the sides. About thirty-four series of scales round the middle of the body, those of the belly much smaller than those on the sides. The keels of some scales on the limbs terminate in prominent spines. Green, with rather irregular yellowish markings, especially on the head. A yellow

PROC. ZOOLOG. SOC.—1872, No. XXXVIII.

lowish cross bar between the shoulders ; limbs with narrow yellowish rings.

One specimen from the East-Indian archipelago is 10 inches long, tail $6\frac{1}{2}$ inches.

PERIPIA MEYERI.

I may mention that *Peripia cantoris* (Gthr. 1864) is identical with *Hemidactylus meyeri* from Bintang (Bleeker, 1859, Nat. Tyds. Ned. Ind. xvi. p. 47). We have also specimens from the Feejee Islands.

SPATHODACTYLUS.

Only the extremity of the penultimate joint of the toes is dilated, shovel-like, and provided below with two divergent series of a few transverse plates ; the last joint is short, but free and armed with a claw. The thumb and fifth toe are reduced to a mere clawless rudiment. Eyelids none. Skin uniformly granular. An angular series of larger scales in the præanal region is continued on the thigh.

Fig. 1.



Fig. 2.



SPATHODACTYLUS MUTILATUS. (Figs. 1 & 2.)

Habit rather slender, with short limbs. Ear-opening small. The first pair of lower labials do not unite behind the median shield ; no other chin-shields. Brown, finely marbled with darker ; a series of round whitish spots commences behind the eye, and is continued along each side of the back to the tail. Lower parts whitish, finely speckled with brown.

One specimen from the East-Indian archipelago is $3\frac{1}{4}$ inches long, the tail being $1\frac{1}{2}$ inch.

CALAMARIA GRACILLIMA. (Plate XXXIX. fig. A.)

Body exceedingly slender, head very small, tail very short, terminating in a very obtuse point. Eye minute. The nostril does not appear to be placed in a separate shield ; it is in the suture between the first labial and frontal, on each side of the rostral. Four upper labial shields ; the frontals diverging behind ; vertical rhombic, broader than long, with an obtuse angle in front and behind, the lateral angles being somewhat pointed. Occipitals rounded behind, longer than broad. If orbital shields are present, they must be exceedingly small. The first pair of lower labials are in contact with each other.

The circumference of the body is one twenty-second of the total length. *Ventral shields three hundred and twenty*; anal entire, subcaudals thirteen. Scales in thirteen rows. Uniform black; on each side of the body a series of round white spots, the first being behind the angle of the mouth, and the last on the very end of the tail.

This singular Snake differs in so many respects from the typical *Calamariæ* that it may be regarded as the type of a distinct genus, to which the name of *Typhlocalamus* may be given. Unfortunately the head of the single example has been allowed to dry, and is somewhat shrunk; but it is almost certain that there is no nasal shield.

The single specimen from Sarawak is 11 inches long, the head being $2\frac{1}{6}$ lines, and the tail $4\frac{1}{2}$ lines.

SIMOTES SUBCARINATUS. (Plate XXXIX. fig. B.)

Allied to *S. signatus*.

Scales in seventeen rows, *minutely striated, and with an obtuse median ridge, like a keel*; these ridges are more apparent on the hinder part of the body than on the anterior. Loreal none, confluent with posterior frontal, the lower angle of which is in contact with the second and third labials; one præ-, one postocular; seven upper labials, the third and fourth entering the orbit; temporals 1+1+2. Anterior chin-shields twice as long as broad, and twice as large as posterior, in contact with four labials. Ventral shields 158; anal entire; subcaudals 54. Ventrals without keels. Greyish olive, with numerous narrow, straight, white, dark-edged cross bars; they are placed at rather irregular intervals, some reaching right across the back and sides, others being much shorter. Head with the markings usual in this genus. Abdomen white, with some darker spots along each side.

One specimen from Sarawak is 15 inches long, tail $3\frac{1}{4}$ inches.

ABLABES PERIOPS. (Fig. 3.)

Eye surrounded by a ring of small scales.

Scales in seventeen rows, short, rounded, without apical groove. Rostral shield broader than high, just reaching the upper surface

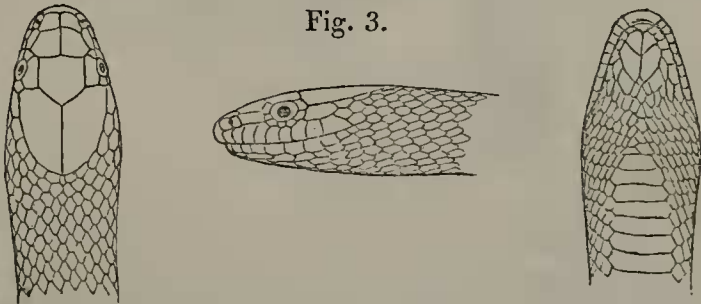


Fig. 3.

of the head; anterior frontals about half as large as posterior, broader than long; vertical five-sided, with a right angle behind,

and with the supraciliary edges parallel and rather shorter than the anterior; occipitals rounded behind, nearly as long as vertical and frontals together; nasal shield entirely divided; loreal longer than high; eye rather small, surrounded by six or seven scale-like shields, besides the supraciliary. Upper labials nine, all small. Temporals $1+2+2$; three pairs of chin-shields, the middle the largest. Ventrals 209; anal bifid; subcaudals sixty-two. Olive-brown; a yellowish line proceeds from each temple, along the side of the back, and soon disappears; the three outer series of scales black. Abdomen whitish, each ventral shield blackish on the front margin; lower side of the head and tail black.

Two specimens from Matang, the larger of which is $15\frac{2}{3}$ inches long, tail $2\frac{2}{3}$ inches.

TROPIDONOTUS SARAWACENSIS.

Tropidonotus maculatus, Peters, Berl. Monatsber. 1871, p. 575.

The name proposed by Professor Peters cannot be retained, because it has been used by Edeling, in 1865, for another Bornean species.

We possess three specimens from Matang, which differ in some respects from the description given by Professor Peters: the scales are in seventeen rows only; eight upper labials, the third, fourth, and fifth entering the orbit.

The shape of the head and the large square spots on the abdomen are characteristic of this species.

TROPIDONOTUS CONSPICILLATUS. (Fig. 4.)

Body of moderate length; head small, short, depressed; eye of moderate size. Scales in nineteen rows, all keeled. Ventrals 140; anal bifid; subcaudals fifty. Anterior frontals obtusely rounded in front; loreal square; one præocular, just reaching to the upper

Fig. 4.



surface of the head; three postoculars; eight upper labials, the third, fourth, and fifth entering the orbit; temporals $1+3$ or 2 . The last maxillary tooth is much larger than the preceding, but separated from it by a very slight interval only. Brown, with a network of indistinct darker spots, and with a series of short yellow vertical bars along each side. An oblique yellow black-edged band from the eye

to the angle of the mouth; neck with a large rhombic blackish spot edged with yellow in front and behind; lower parts whitish, each ventral scute with a brownish line across the front margin. These dark lines become broader on the posterior half of the body, the subcaudals being marbled with brown.

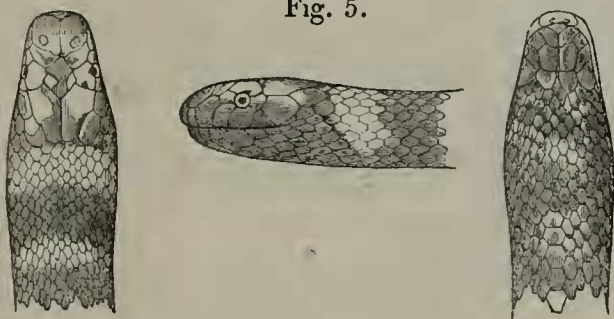
Three specimens from Matang, the largest of which is 16 inches long and appears to be adult, the length of the tail being 3 inches.

HYDROPHIS BROOKII. (Fig. 5.)

Allied to *Hydrophis carinata*.

Head very small, not quite twice as long as broad; neck very slender, its length being one third of the total. One postocular; the third upper labial is not in contact with the nasal. Two pairs

Fig. 5.



of chin-shields, which are in contact with each other. Thirty-one series of scales round the neck. Scales rather imbricate, those on the back and sides with a short keel. Ventral shields 416, those of the attenuated portion very distinct, and twice as large as the scales of the adjoining series, the posterior being of comparatively smaller size. Four anal shields. Trunk with sixty-three complete black rings, which are broader than the interspaces of the yellowish ground-colour, and not much broader on the back than on the belly. Head and lower side of the foremost part of the trunk black; the former with a yellow horseshoe-shaped mark across the frontals and nasals, and extending backwards over the supraciliary edge to the temple. Tail with eight black rings.

One adult female from the coast of Sarawak is 36 inches long; the foetuses in the oviduct are fully developed, and resemble the parent in every respect. This shows that the species of *Hydrophis* are subject to much less variation than was formerly supposed.

RANA CONSPICILLATA. (Plate XL. fig. A.)

Snout rather short, depressed, somewhat obtuse, with very indistinct canthus rostralis and with the sides sloping; loreal region grooved. Eyes of moderate size. *Tympanum entirely hidden*. Lower jaw with a pair of very prominent but not pointed apophyses in front, which are much stronger in the male than in the female

and young. Vomerine teeth in two oblique series converging behind and commencing from between the inner nostrils. Inner nostrils and Eustachian tubes rather narrow. Skin of adult examples smooth, except the lower leg and the foot, which are more or less covered with tuberosities; in some young examples also the sides are tubercular. Hind limbs thick and short, the distance between the vent and heel being but little less than the length of the body. Tips of the fingers and toes swollen, those of the latter more so than those of the former; toes completely webbed, a cutaneous fringe along the outside of the first and fifth toes; a narrow fringe along the inner metatarsal edge, including a single elongate tubercle. An oblique black band descends from behind the eye towards the shoulder. Upper parts blackish or blackish brown, sometimes marbled with darker on the sides and legs; adult females with a yellow vertebral band from the snout to the vent. Lower parts whitish, throat finely marbled with brown. There is no light band between the eyes.

Of this species we have specimens of the different sexes and ages from Matang. An adult male is 3 inches long, the length of the hind leg being $4\frac{1}{4}$ inches.

Like *Rana kuhli* and the Javan *R. macrodon*, to which this species is allied, it lacks a gular sac or sublingual openings.

LEPTOBRACHIUM GRACILE.

Similar to *Leptobrachium hasseltii*, but with much more slender limbs.

Snout not depressed, as long as the eye, with distinct canthus rostralis, and with the loreal region but slightly shelving. Eye large, prominent; tympanum distinct, with a curved linear fold above; inner nostrils much narrower than the Eustachian tubes; tongue very large, filling the entire cavity of the mouth, notched behind. Skin perfectly smooth. Third finger considerably longer than the others. The length of the body is but little more than the distance between the vent and heel. Metatarsus without tubercle; toes connected by a very short basal membrane. Upper parts greyish olive; a whitish spot below the eye, upper arm and elbow whitish; hind limb with blackish cross bars, lower and lateral parts of the body and hind limb with rather large irregular black spots.

One specimen from Matang.

	millims.
Total length	42
Fore limb	33
Third finger	10
Hind limb	75
Tarsus	13
Fourth toe	17

BUFO LEPTOPUS.

Allied to *Bufo cruentatus* (= *Hylaplesia borbonica*, Boie) and *Hylaplesia brevipes* (Ptrs.), from which latter species it is distinguished principally by the presence of two metatarsal tubercles.

In general habit it resembles much the two species named. All the upper and lateral parts are covered by small warts and tubercles, *which on the side of the neck do not form a parotoid*. Tympanum distinct, one fourth of the size of the eye. Legs very slender, and comparatively more so in adult examples than in young ones. The fore leg extends beyond the vent when laid backwards, and the heel to the end of the snout when the hind leg is laid forwards. In a young example the heel extends only to the tympanum. The young differs from the old also with regard to the development of the web, length and termination of the toes. In an old example the fingers and toes are very slender, slightly swollen at the tip; the former are quite free, and the latter connected by a basal membrane only; whilst in the young the fingers and toes are short, dilated, with the extremity truncated*; and the former are connected by a short, the latter by a very distinct web. *Two flat callosities on the metatarsus*. Brown above, marbled with reddish or with black dots; throat and chest with blackish spots, or entirely black.

Two examples from Matang; the measurements are as follows:—

	Adult. millims.	Young. millims.
Total length	54	30
Fore leg	45	25
Lower arm	17	7
First finger	7	2½
Third finger	13	6
Hind limb	85	39
Lower leg	27	12
Tarsus	17	7½
Fourth toe	19	9
First toe	4	2½

HYLORANA JERBOA. (Plate XL. fig. B.)

Hind limbs extraordinarily long, their length being twice and a half as long as that of the body. Shape of the body similar to that of *Hylorana erythræa*; canthus rostralis sharp, loreal region subvertical and grooved; eye shorter than the snout, but larger than the tympanum. Disks of the fingers and toes moderately developed; fingers slender; toes completely webbed, the length of the fourth being three fifths of that of the body. Metatarsus with two small tubercles. Skin of the back finely granular; a glandular fold along each side of the back. Lower parts smooth. Inner nostrils of moderate width, Eustachian tubes rather larger. Vomerine teeth in two oblique series, converging posteriorly, between the inner nostrils. Upperside of the head and back red, side of the body and head black, upper lip and glandular folds greenish white, legs marbled with brown; lower side of the foot and tarsus black; abdomen whitish.

One specimen from Matang; its body is 2 inches long. Length of the hind limb 5 inches, distance between vent and heel 2¾ inches.

* The typical specimens of *Hylaplesia brevipes* are evidently young, and show similar peculiarities.

POLYPEDATES GUTTATUS (Gthr.).

Having received two other specimens of *Ixalus guttatus*, I see that the typical specimen is not full grown, being only 30 mm. long. No trace of vomerine teeth are visible in it; whilst two short tooth-bearing ridges obliquely diverging backwards are present between the inner nostrils of the old specimens. The body of the latter is 47 mm. long. *Polypedates raniceps* appears to be closely allied to this species, but to have a larger tympanum.

POLYPEDATES SIGNATUS. (Plate XL. fig. C.)

Somewhat similar in habit to *Polypedates guttatus*, but with the snout shorter; canthus rostralis distinct, loreal region vertical, concave; eye large; tympanum about one half the size of the eye. Back and sides granular, lower parts smooth. Fingers very slender, quite free, *with very small disks*; toes slender, two thirds webbed, with small disks; two small metatarsal tubercles. Inner nostrils narrow, narrower than the Eustachian tubes; vomerine teeth in two oblique converging series between the inner nostrils. Upper parts black; a light olive band runs along the upper margin of the snout and eyelid, and along each side of the back, the back itself being spotted with reddish olive, as are the sides; upper parts of the legs with black cross bands; lower parts whitish.

One specimen from Matang.

	millims.
Total length.....	40
Fore limb.....	30
Third toe.....	9
Hind limb.....	73
Tarsus.....	11
Fourth toe.....	20

DESCRIPTION OF THE PLATES.**PLATE XXXV.**

Fig. A. *Draco cristatellus*, p. 592. | Fig. B. *Draco spilopterus*, p. 592.

PLATE XXXVI.

Tiaris liogaster, p. 592.

PLATE XXXVII.

Fig. A. *Lophocalotes interruptus*, p. 593. | Fig. C. *Tiaris sophiæ*, p. 593.
B. *Tiaris miotympanum*, p. 592. |

PLATE XXXVIII.

Tiaris tuberculatus, p. 593.

PLATE XXXIX.

Fig. A. *Calamaria gracillima*, p. 594. | Fig. B. *Simotes subcarinatus*, p. 595.

PLATE XL.

Fig. A. *Rana conspillata*, p. 597. | Fig. C. *Polypedates signatus*, p. 600.
B. *Hylorana jerboa*, p. 599. |